

REMARKS

Claims 1, 25, 35, 64 and 88 have been amended and claims 34 and 70 have been cancelled. Upon entry of this amendment, claims 1-33, 35-69 and 71-101 will be pending in the application.

Amendment to Specification

The specification has been amended to delete paragraph 0021 and move its contents to the end of paragraph 0020, delete paragraph 0071 and move its contents to the end of paragraph 0070, delete paragraph 0080 and move its contents to the end of paragraph 0079, delete paragraph 0082 and move its contents to the end of paragraph 0081, and delete paragraph 0161 and move its contents to the end of paragraph 0160. These amendments are being made to correct formatting errors in the original application.

Rejection Under 35 U.S.C. §103(a)

Applicants respectfully request reconsideration of the rejection of claims 1-101 under 35 U.S.C. §103(a) as obvious over the combined teachings of U.S. Patent No. 6,605,568 (Massmann et al.), U.S. Patent No. 5,070,197 (Chin et al.), U.S. Patent No. 4,405,531 (Franz) and pages 229-230 of The Herbicide Glyphosate written by D.J. Turner (hereinafter "Turner").

Independent claims 1, 63 and 64 are directed to processes for preparing a water-soluble pesticidal composition comprising a water-soluble salt of glyphosate acid and a dicarboxylate component. Independent claim 88 is directed to a process for preparing a pesticide enhancer composition comprising a salt of a dicarboxylic acid and a surfactant component. Independent claims 1 and 64 have been amended to more particularly define

the claimed invention by incorporating the limitations of former dependent claims 34 and 70, respectively. Independent claim 88 has been amended to more particularly define the claimed invention by requiring the enhancer composition that is formed by the process be a paste or dry pesticidal enhancer composition.

Independent Claims 1, 63 and 64

The process of claim 1 comprises adding a glyphosate component comprising particulate glyphosate acid, a base component, water and optionally an adjuvant component to a reactor thereby causing a reaction of glyphosate acid and the base component to form a reaction mass comprising the water-soluble salt of glyphosate acid. A dicarboxylate component is added to the reactor. Claim 1 as amended further requires reducing the moisture content of the reaction mass to form a water-soluble paste or a dry water-soluble pesticidal composition comprising the water-soluble salt of glyphosate acid and the dicarboxylate component.

Independent claim 63 is directed to a specific process embodiment comprising preparing the reaction mass in accordance with claim 1 and reducing the moisture content of the reaction mass using the heat generated by the reaction between the particulate glyphosate acid and the base component to cause partial evaporation of the water from the reaction mass. A paste is formed containing the water-soluble salt of glyphosate acid and having a moisture content of from about 2% to about 20% by weight. A dicarboxylate component is added to the reaction mass and/or to the paste.

Independent claim 64 is directed to a process for preparing a dry water-soluble pesticidal composition comprising one or

more water-soluble salts of glyphosate acid and a dicarboxylate component. The process comprises mixing a glyphosate component comprising one or more water-soluble salts of glyphosate acid and a dicarboxylate component to form a dry pesticidal composition comprising one or more water-soluble salts of glyphosate acid and the dicarboxylate component. The glyphosate component optionally contains sources of glyphosate other than the water-soluble salts of glyphosate acid provided that at least 50% by weight acid equivalent (a.e.) of the glyphosate component is one or more water-soluble salts of glyphosate acid. As amended, claim 64 requires that the glyphosate component which is mixed with the dicarboxylate component be present in a paste.

In order to establish a *prima facie* case of obviousness, the prior art reference(s) must teach or suggest all the claim limitations, there must be some suggestion or motivation, either in the reference(s) itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings and obtain the claimed invention, and there must be a reasonable expectation of success. See MPEP 2142. Applicants respectfully submit that the Office has failed to establish a *prima facie* case of obviousness with respect to the invention defined in independent claims 1, 63 and 64.

U.S. Patent No. 6,605,568 issued to Massmann et al. is potentially prior art with respect to the subject application under 35 U.S.C. §102(a) and/or §102(e). The corresponding PCT publication, WO 01/08492, also made of record, is prior art with respect to the subject application under 35 U.S.C. 102(b).

Massmann et al. is directed to a process for preparing a downstream processable ammonium glyphosate paste, the process

comprising mixing particulate glyphosate acid, ammonia and water. A reaction of glyphosate acid and ammonia occurs thereby generating heat and causing partial evaporation of the water and forming an ammonium glyphosate paste having a moisture content of about 5% to about 20% by weight. Dry granular herbicidal compositions can be prepared from the paste. Nothing in the disclosure of Massmann et al. teaches or suggests the use of a dicarboxylate component or how such use might be suitably incorporated into the disclosed manufacturing process.

Chin et al. discloses a continuous extrusion process for the preparation of solid, water-soluble or water-dispersible pesticidal salt compositions in which a pesticidal Bronsted acid, such as glyphosate acid, for example, among many others, is admixed with a Bronsted base, most preferably NaOH, KOH, $(C_2H_5)_2NH$, $(C_2H_5)_3N$, $(HOC_2H_4)_2NH$ or $(HOC_2H_4)_3N$, and reacted in an extruder to produce a granular pesticidal extrudate. Not only does Chin et al. fail to disclose the use of a dicarboxylate component in combination with glyphosate acid or a salt thereof, the reference fails to teach or suggest how such a combination might suitably be incorporated into the disclosed extrusion process to arrive at the process defined in claims 1, 63 or 64.

Franz discloses various glyphosate salts and other glyphosate derivatives. The salts are prepared by partial or complete neutralization of the acid with the appropriate base, basic carbonate, ammonia or organic amine, in aqueous solution. Again, the cited reference makes no mention of a dicarboxylate component, nor does it teach or suggest how such a dicarboxylate component might be incorporated into a process for the preparation of a dry or paste, water-soluble pesticidal composition comprising a water-soluble salt of glyphosate and a dicarboxylate component as called for in claims 1, 63 or 64.

Turner discloses that various divalent and trivalent acids, including oxalic acid and tartaric acid, can restore glyphosate activity when added to glyphosate spray formulations by acting as a sequestering agent for or by immobilizing metal ions (particularly calcium ions that are present in hard water when used to prepare spray formulations) known to cause inactivation of glyphosate (i.e., antagonism).

In support of the contention that Turner would motivate one skilled in the art to modify the processes disclosed in the other cited references, the Office asserts on page 3 of the Office action, that "[o]ne of ordinary skill in the art would be motivated to add the divalent acids of Turner to glyphosate salt compositions in order to enhance their activity" and "the addition of divalent acids to glyphosate compositions was known in the art and expected to enhance glyphosate phytotoxicity." However, contrary to these assertions, what Turner describes is only the addition of divalent and trivalent acids such as oxalic acid to tank mix or spray solution formulations to restore glyphosate efficacy lost by the presence of metal ions such as calcium ions in hard water used in the preparation of such formulations. This is evident from page 221 of Turner¹ where it is stated that "[s]equestrants may be included, to help counteract the effects of hard water" and from page 229 where it is stated that "[f]rom the purely formulation aspect, materials which immobilize or sequester polyvalent metals can sometimes remove this antagonism and increase phytotoxicity." In the last quoted passage, 'increase in phytotoxicity' is in reference to 'antagonism.' Turner makes no disclosure or suggestion of

¹ A Supplemental Information Disclosure Statement accompanies this amendment submitting the entire text of Chapter 15 of The Herbicide Glyphosate, pp. 221-240.

dicarboxylate-mediated enhanced glyphosate efficacy as compared to glyphosate in the absence of metal ions, as in, for example, a tank mix or spray solution not formulated using hard water. Accordingly, the assertion that Turner would motivate one skilled in the art to include a dicarboxylate component in the manufacturing processes for making a glyphosate salt composition as disclosed in Massmann et al., Chin et al. and/or Franz as a strategy to generally enhance the activity of glyphosate salt compositions is unfounded.

Moreover, the teaching of Turner is limited to adding divalent and trivalent acids such as oxalic acid to spray mixtures and tank mix formulations that contain glyphosate antagonizing metal cations. Nowhere does Turner provide motivation to modify the glyphosate salt composition manufacturing processes disclosed in Massmann et al., Chin et al. and/or Franz by inclusion of a dicarboxylate component. Rather, Turner teaches away from the invention defined in claims 1, 63 and 64 that call for incorporating a dicarboxylate component into a process for the preparation of a dry or paste, water-soluble pesticidal composition comprising a water-soluble salt of glyphosate and a dicarboxylate component. For example, at page 221, Turner discloses that "[t]here are limitations as to what can be mixed with a herbicide at the factory. Some chemicals are unstable or react with other ingredients to reduce the storage life of the product . . . Some ingredients are only useful in special circumstances, for example when the herbicide is used against a particular weed. Materials which for such reasons are not included in the manufacturer's formulation are sometimes added to the spray just before use." Consistent with this approach and in contrast to the claimed invention, Turner discloses adding metal ion sequestrants such as oxalic acid

directly to an aqueous glyphosate spray formulation or tank mix prior to application to plants and only in those situations where metal ions are present in hard water used to prepare such formulations or where metal ions are otherwise present in the plants to be treated at concentrations that would negatively impact glyphosate activity. Turner actually dissuades addition of sequestrant additives to concentrate glyphosate spray solutions at page 230 where it is noted that "[i]n practice these additives are difficult to use because they sometimes cause precipitation of glyphosate acid from concentrated spray solutions which can block spray nozzles."

Turner, like the other cited references, does not provide any teaching or suggestion as to how a dicarboxylate component might be suitably incorporated into a process for the preparation of a dry or paste, water-soluble pesticidal composition comprising a water-soluble salt of glyphosate and a dicarboxylate component. Turner, either alone or in combination with the other cited references, fails to teach or suggest a process for the preparation of a dry or paste, water-soluble pesticidal composition comprising a water-soluble salt of glyphosate and a dicarboxylate component in which a dicarboxylate component is added to the reactor in which a glyphosate component, base component, water and optionally an adjuvant component are added and reacted (claim 1); a dicarboxylate component is added to the reaction mass and/or to the paste formed by reaction of glyphosate acid and a base component (claim 63); or a dicarboxylate component is mixed with a glyphosate component comprising one or more water-soluble salts of glyphosate acid present in a paste (claim 64). Turner's suggestion to add a divalent or trivalent acid such as oxalic acid to a tank mix or spray glyphosate formulation (e.g.,

prepared by dissolving the dry glyphosate compositions of Massmann et al. or Chin et al. in water) in those special circumstances where metal ions are present at concentrations that would negatively impact glyphosate activity is not relevant to a process for the preparation of a dry or paste, water-soluble pesticidal composition comprising a water-soluble salt of glyphosate and a dicarboxylate component as recited in claims 1, 63 or 64. In accordance with applicants' invention and despite the teaching of Turner regarding difficulties associated with adding metal ion sequestrants to concentrated spray solutions, processes have been discovered that allow a dicarboxylate component to be effectively incorporated "at the factory" in dry or paste, water-soluble glyphosate concentrate compositions.

In view of the above, applicants respectfully submit that the Office has failed to establish a *prima facie* case of obviousness with respect to independent claims 1, 63 and 64. Dependent claims 2-33, 35-62, 65-69 and 71-87 are likewise submitted as patentable for the reasons set forth above and the further features recited therein.

Independent Claim 88

Independent claim 88 is directed to a process for preparing a pesticide enhancer composition comprising a salt of a dicarboxylic acid and a surfactant component. The process comprises combining a dicarboxylate component comprising the dicarboxylic acid, a base component and a surfactant component in a reactor to react the dicarboxylic acid and the base component. As amended, claim 88 requires forming the enhancer composition as a paste or dry pesticidal enhancer composition

comprising the salt of the dicarboxylic acid and the surfactant component.

None of the cited references teach or suggest the preparation of a pesticidal enhancer composition comprising a salt of a dicarboxylic acid and a surfactant component as called for in claim 88. While Turner discloses the use of divalent or trivalent acids such as oxalic acid as metal chelators or sequestrants by addition to aqueous spray solutions of glyphosate, the reference fails to teach or suggest a process in which a dicarboxylic acid is reacted with a base component to prepare an enhancer composition in the form of a paste of dry composition comprising a salt of a dicarboxylic acid and a surfactant component.

Accordingly, applicants respectfully submit that the Office has failed to establish a *prima facie* case of obviousness with respect to independent claim 88. Dependent claims 89-101 are likewise submitted as patentable for the reasons set forth above and the further features recited therein.

Applicants solicit favorable reconsideration and allowance of all pending claims.

Applicants request the Commissioner charge any fee deficiency or overpayment in connection with this amendment to Deposit Account 19-1345.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Vincent M. Keil". The signature is fluid and cursive, with the first name "Vincent" written in a larger, more prominent script than the last name "Keil".

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